



Ground Zero Electrostatics MTR-4000: THEORY OF OPERATION

THEORY OF OPERATION WRIST STRAP TESTER MODEL: MTR-4000

The MTR-4000 wrist strap tester checks the combined resistance of an ESD wrist strap and the wearer. If the resistance is either too low or too high an alarm is sounded, and an appropriate led indicator is lit. If the resistance is in the allowable range, a PASS the led (green) is lit. A switch may select the resistance range U.S. or EURO standards. If the battery voltage is too low, a warning led (yellow) will light.

A precision high impedance dual bridge circuit tests combined wrist strap/wearer resistance. A precision 10Meg ohm resistor and the wrist strap/ wearer form on half the bridge. It is energized by 2 the battery voltage. The 10Meg ohm resistor is one arm of the precision bridge, and limits the current though the wearer to about 0.5 uA. The wearer plugging the wrist strap into the jack on the tester and depressing the metal button in the center of the tester makes the connections to the wrist strap/wearer. The metal cap on the button is the other contact, which completes the circuit.

Two bridges are formed with this fist half by two other halves made up of precision resistors, one pair set for the low resistance limits, and one pair for the high resistance limit. These are also energized by the battery voltage. A very low input current CMOS comparator monitors each bridge. The comparators control the appropriate LEDs and the audible alarm. A separate circuit lights a led and sounds the alarm if the battery voltage drops below 6V.

END



4916 26th Street West, Suite 100, Bradenton, Florida 34207

Toll Free 877-GND-ZERO (463-1376), **Direct Phone** 941-751-7581 **Fax** 1-941-751-7586

Email sales@gndzero.com

http://www.gndzero.com